

THREE NEW GENERA OF VERNONIEAE FROM
SOUTH AMERICA, *DASYANDANTHA*, *DASYANTHINA*,
AND *QUECHUALIA* (ASTERACEAE)

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Abstract. — Three new genera of Vernonieae are described from South America, each having Type A pollen and hairs inside the corolla. They are placed in two different subtribes, the arborescent genus *Dasyandantha* of Venezuela in the Piptocarphinae, the herbaceous *Dasyanthina* of eastern Brazil and shrubby or scandent and *Quechualia* of the central Andes, in the Vernoniinae. *Dasyandantha* has a thyrsoid inflorescence with glomerules of sessile heads. *Dasyanthina* and *Quechualia* have thyrsoid inflorescences with corymbiform branches and have glanduliferous anther thecae, but differ in the shape and distribution of the hairs on their corollas. *Dasyandantha cuatrecasiana* is transferred from *Vernonia* and *Piptocarpha*, *Dasyanthina serrata*, *D. palustris*, *Quechualia cardenasii*, *Q. fulva*, and *Q. trixioides* are transferred from *Vernonia*, and *Quechualia smithii* is described as new.

Progress toward systematic resolution of the Neotropical genera of the Vernonieae has nearly eliminated the excessively paraphyletic aspects of *Vernonia* Schreb. in the Western Hemisphere (Robinson 1980, 1987a, 1987b, 1987c, 1988a, 1988b, 1989a, 1989b, 1990, 1992, 1993; Robinson & Funk 1987). The remaining elements needing removal from *Vernonia* represent comparatively isolated small groups that sometimes contain notable species such as *V. fulva* Griseb. of western South America or *V. serrata* of Brazil. The latter two species, their closest relatives, and the rare *V. cuatrecasiana* of Venezuela show distinctive pubescence on the inner surface of the corolla throat. The species with hairs inside their corollas do not form a single related group, but form three distinct groups named here as the genera *Dasyandantha*, *Dasyanthina* and *Quechualia*. Hairs are consistently present inside the corollas in *Dasyandantha* and *Dasyanthina*, but in *Quechualia* the pubescence is lacking in the corollas of the two rarest species. In spite of the lack of immediate relationship of all the genera and

the partial unreliability of the corolla pubescence as a character in *Quechualia*, it is convenient to name the three genera together at this time. With the establishment of the present three genera, it is believed that fewer than ten small Neotropical elements remain in need of removal from *Vernonia*.

The three genera described here have the characters of the broad, excessively paraphyletic, traditional concept of *Vernonia*, including alternate leaves, non-stellate hairs, discrete heads, epaleaceous receptacles, regular corollas, and a pappus of many capillary bristles. One of the three genera, *Dasyandantha*, is based on a species that was placed in *Piptocarpha* R.Br. by Badillo (1974) on the basis of the basally tailed anther thecae, but such tails occur in all three genera. The tails are not the sharp, sclerified type seen in true *Piptocarpha*, but are the unsclerified type with denticulate bases seen in many species of *Critoniopsis* Sch.-Bip. of the Piptocarphinae and in *Vernonanthura* H.Rob. of the Vernoniinae that were included in the broad concept of *Vernonia*.

All three of the new genera are among those elements within the traditional concept of *Vernonia* that have Type A pollen grains. These grains, like those found in *Vernonia* sens. str. and *Vernonanthura*, are tricolporate and spinulose with a perforated tectum continuous over the non-colpar areas. The genera all have elongate raphides in the achene walls, which differ from the subquadrate raphides in *Vernonia* and *Vernonanthura*. The final character, the one by which the present three genera are selected here for description, is the presence of hairs inside the corolla throat, a feature not found in other Neotropical species falling within the traditional concept of *Vernonia*. Such hairs are accompanied by hairs or spicules on the outer surfaces of the corolla lobes like those of many relatives of *Lepidaploa* (Cass.) Cass.

The three genera described here with hairs inside their corollas can be best placed in the Vernoniaceae as follows. *Dasyandantha* has subcoriaceous leaves with short, felty pubescence and densely thyrsoid inflorescences with glomerules of sessile heads. The genus is generally similar to *Critoniopsis* Sch.-Bip. in appearance. The arborescent habit, deciduous inner involucre bracts, and complete lack of glands on the anthers are characteristic of the subtribe Piptocarphiinae (Robinson et al. 1980), where I place both genera. The hairs on the stems are unbranched. The elongate shape of the raphides in the achene walls of *Dasyandantha* is the only character not in complete conformance with the placement of the genus. The raphides of the Piptocarphiinae are otherwise rather subquadrate or shortly rhomboidal. *Dasyanthina* and *Quechualia* are herbs or weak to scandent shrubs with persistent inner involucre bracts and glands on the connectives or appendages of the anthers, as in the subtribe Vernoniinae (Robinson 1992), where I place the genera. The two genera have hairs of the stem and some other organs T-shaped, one of the types found in the Vernoniinae but not in the Piptocarphiinae.

The stated characteristics of deciduous inner involucre bracts and hairs inside the corolla immediately distinguish *Dasyandantha* among the genera of the Vernoniaceae. It is the only member of the Piptocarphiinae with hairs inside the corolla. It is also distinct in the very long, rather lanate pubescence of the stems, the corolla lobes not longer than the throat, and the elongate raphides of the achenes. The phyletic position is considered close to *Critoniopsis*, which is phyletically a core-genus for the subtribe.

Dasyanthina and *Quechualia* are distinguished within the subtribe Vernoniinae from all other genera by the hairs inside the corollas, but their relationship within the subtribe is not certain. Most genera of the subtribe can be placed in one of two groups. The group containing *Vernonia* and *Vernonanthura* has corollas glabrous, raphides in the achene walls strictly subquadrate, and pollen strictly Type A. The second group has been referred to as the *Lepidaploa* Complex (Robinson 1987a, 1987b, 1987c, 1988a, 1988b, 1988c, 1990) and is characterized by often strongly cymose branches of the inflorescence, corolla lobes pubescent outside, raphides in the achene wall often elongate, and the pollen mostly lophate. The new genera *Dasyanthina* and *Quechualia* resemble *Vernonanthura* in the tails on the bases of the anther thecae, but they differ from both *Vernonia* and *Vernonanthura* in the hairs on either the inner or outer surfaces of the corolla. They also differ in the elongate raphides in the achene walls. The two new genera differ from most members of the *Lepidaploa* Complex by their Type A pollen and by their corymbose rather than seriate-cymose inflorescences.

The phyletic position of *Dasyanthina* and *Quechualia* could be considered closer to the *Lepidaploa* group in the Vernoniinae because of the hairs on the outside of the corolla lobes, the elongate raphides in the achene walls, and the sometimes thickened vein apices in the corolla lobes, but none of these characters is convincing. Hairs on the

corolla lobes occur widely in the tribe outside of the subtribe Vernoniinae. Thickened veins at the tips of the corolla lobes seem to be of limited systematic value; they are common in most members of the *Lepidaploa* relationship and are lacking in *Vernonia* and *Vernonanthura*. However, a limited survey has revealed that distally thickened veins occur in a number of other genera of the tribe in both hemispheres. The thickened veins occur in *Quechualia* but not in *Dasyanthina*. Elongate raphides in the achene wall occur in most of the genera of the *Lepidaploa* generic alliance, but *Dasyanthina* and *Quechualia* do not closely resemble any of those genera. The elongate raphides in *Dasyanthina* and *Quechualia* may be of separate origin in the Vernoniinae, as they evidently are in *Dasyandantha* in the Piptocarphinae. At present, *Dasyanthina* and *Quechualia* are regarded in the Vernoniinae as a separate group from either the *Vernonia/Vernonanthura* group or the *Lepidaploa* group.

The closest relationships of *Dasyanthina* and *Quechualia* seem to be with each other. Both genera have T-shaped hairs or a more complex, derived form of zigzag hairs on vegetative parts. Both genera have more corymbiform inflorescences than seen in either the *Vernonia/Vernonanthura* group or the *Lepidaploa* group. Both genera have heads with obvious peduncles, broadly campanulate involucre, imbricate involucral bracts in 5–6 series, and usually 25–60 florets. The achenes of both genera have numerous setulae, as well as elongate raphides.

In spite of the similarities, differences between the two new Vernoniinae genera lend a considerable degree of uncertainty as to their relationship. Geography is an obvious difference. *Dasyanthina* is restricted to the coast of southeastern Brazil, whereas *Quechualia* ranges from northern Peru south through Bolivia to northern Argentina. *Dasyanthina* seems to be strictly herbaceous, whereas *Quechualia* is more shrubby and often cited as a vine. The inflorescence of

Dasyanthina is a short, rounded, thyrsoid panicle, whereas that of *Quechualia* is an elongate, pyramidal, thyrsoid panicle. The raphides in the achene walls are much more numerous in *Quechualia*, and the achenes are larger with more ascending setulae. Actually, the hairs of the corolla, the seeming unifying character of the two genera, provide important differences in their details. *Dasyanthina* has the inner surface of the corolla throat always densely covered with stiff, unicellular hairs, but in *Quechualia* the inner surface of the throat is sparsely pubescent with long, multicellular hairs in two of the species and is glabrous in the other two species.

The detailed structure of the hairs in each of the three new genera is of special interest. The hairs mentioned are all technically uniseriate. The T-shaped hairs on the stems and inflorescence branches of *Dasyanthina* and *Quechualia* (Fig. 2F) contrast strongly with the sublanate pubescence in *Dasyandantha*. The corollas of *Dasyandantha* have bi- or tri-cellular hairs on both the outside of the throat and lobes and the inside of the throat. These hairs have the short, thinner-walled basal cells. The corollas of *Dasyanthina* have unicellular hairs outside of the lobes and inside of the throat (Fig. 1E). *Quechualia* has unicellular hairs outside of the lobes (Fig. 2H), but the hairs inside the corolla throat in two of the species are multicellular (Fig. 2G). The long multicellular internal hairs of *Quechualia* are particularly distinctive in their weak, thin-walled basal cells and the contortions in the upper parts near the widely spaced septations. In *Q. fulta* the hairs can sometimes be numerous. The long hairs often seem to detach, and a few loose hairs have been seen in preparations of the species in which no attached hairs have been seen. The unicellular hairs on the corolla lobes and throat of *Dasyanthina* (Fig. 1E, I) and on the corolla lobes of *Quechualia* (Fig. 2H) are structurally the same, and their similarity helps further suggest that relationship between the genera. Their bases are broadened, and they char-

acteristically have a peg that inserts into the thin-walled tissue of the corolla. There are no separate basal cells in the latter hairs.

The three new genera are as follows. The pollen grains were measured in Hoyer's Solution.

Dasyandantha H. Robinson, gen. nov.

Type: *Vernonia cuatrecasiana* Aristeg.

Plantae arborescentes; caules sublanati; folia simplices alterna breviter petiolata. Inflorescentiae dense pyramidaliter thyrsoido-paniculatae; bractae involucri interiores deciduae; capitula homogama; corollae discoideae in lobis distaliter extus et in faucibus intus et extus dense pilosulae, pilis uniseriatis et bi- vel tri-cellularibus; thecae antherarum base tenuiter caudatae; pili stylorum omnino obtusi; achenia setulifera, raphidis elongatis. Grana pollinis in subtypo A.

Trees to 6 m tall; stems sublanate with sordid hairs, with solid pith. Leaves simple, alternate, petioles ca. 1 cm long; blades subcoriaceous, obovate, to 30 cm long, 10 cm wide, base narrowly cuneate, margins entire or with a few minute mucronate-denticulations distally, apex shortly acute, upper surface densely pilosulous, lower surface finely velutinous on veins and veinlets; venation pinnate with ca. 10 secondary veins on each side, veinlets prominulous in dense reticulum. Inflorescence without foliose leaves or bracts, densely pyramidally thyrsoid-paniculate, bearing glomerules of sessile heads. Heads homogamous, discoid, broadly campanulate; involucre 0.3–0.4 cm wide, with bracts ca. 30, imbricate in ca. 4 series, inner bracts deciduous; receptacles epaleaceous. Florets ca. 12; corollas white, narrowly funnelform, basal tube slender, throat distinct, broad, as long as lobes, lobes narrowly triangular, with scattered small glands outside, veins not thickened distally; outer surface of throat, lobe tips, inner surface of throat, and inner surface of lobe bases pilosulous with stiff, uniseriate hairs, hairs

bi- or tri-cellular with short, thinner-walled basal cells, with long, stiff, thicker-walled distal cell; anthers without glands, bases of thecae spurred and caudate, tails denticulate, with thin-walled cells; apical anther appendages with thin-walled cells; style with sclerified basal ring; shaft of styles with hairs distally; style branches with sweeping hairs all blunt-tipped. Achenes 8-ribbed, covered with biseriate setulae, with glandular dots mostly near base, raphides in walls elongate; carpodium doliiform, not extending above constriction, glabrous, with short and thick-walled cells; pappus with a short, narrowly squamulose outer series, inner capillary bristles easily deciduous, broadened distally. Pollen grains tricolporate, spinulose, type A, ca. 40 μ m in diam.

The generic name is derived from *dasy* meaning shaggy and *antha* meaning flower, with an intervening *and* referring to the Andes. The genus contains the following single known species.

Dasyandantha cuatrecasiana (Aristeg.)
H. Robinson, comb. nov.

Vernonia cuatrecasiana Aristeg., Acta Biol. Venez. 3:363. 1963. *Piptocarpha cuatrecasiana* (Aristeg.) Badillo, Rev. Fac. Agron. (Maracay) 7(3):14. 1974. VENEZUELA: Edo. Lara, Falcón, Yaracuy and Cojedes (Badillo, 1989).

The species is well illustrated by Aristeguieta (1963).

Dasyanthina H. Robinson, gen. nov.

Type: *Vernonia serrata* Less.
(Fig. 1A–H)

Plantae herbaceae perennes; caules in pilis appresse T-formibus sparse obsiti. Folia simplicia alterna longe petiolata. Inflorescentiae rotundate thyrsoidae, ramis corymbiformis. Capitula homogama tenuiter pedunculata; bractae involucri interiores plerumque persistentes; flores ca. 25; corollae discoideae in faucibus intus et lobis ex-



Fig. 1. *Dasyanthina*. A–H. *D. palustre* (Gardner) H. Robinson. A. Habit. B. Head. C. Corolla showing anthers and style. D. Section of corolla showing tailed anthers, glands on connective, and short hairs on inner surface of corolla. E. Short hairs for inner surface of corolla throat. F. Style showing enlarged basal ring. G. Achene. H. Raphides from cells of achene wall. I. Hairs from inner surface of corolla throat in *D. serrata* (Less.) H. Robinson.

tus dense pilosulae, pilis unicellularis; thecae antherarum base tenuiter caudatae in connectivis glanduliferae; achenia setulifera, raphidis elongatis. Grana pollinis in typo A.

Perennial herbs 2–4 m tall; stems with very sparse pubescence of appressed, T-shaped hairs, with solid pith. Leaves simple, alternate, petioles elongate, sometimes winged to base; blades thinly herbaceous, ovate, to 50 cm long, mostly 15–25 cm long and 4.5–16.0 cm wide, base and apex acuminate, margins closely and sharply serrulate, surfaces sparsely puberulous with small often T-shaped hairs, venation pinnate with ca. 10 secondary veins per side. Inflorescence with foliose bracts only at lower primary nodes, rounded thyrsoid with corymbiform cymose branches and slender peduncles. Heads discoid, broadly campanulate; involucre 0.5–1.0 cm wide, with bracts ca. 60, imbricate in 5 or 6 series, inner bracts mostly persistent; receptacles epaleaceous. Florets ca. 25; corollas white, narrowly funnelform, throat cylindrical, somewhat shorter than linear lobes, veins not thickened at tips of lobes, inner surface of throat and distal outer surface of lobes densely covered with stiff, unicellular hairs (Fig. 1D, E, I), rarely with a few multicellular hairs inside of throat; anther thecae with thin-walled tails at base, with glands on connective (Fig. 1C, D), apical appendage without glands, with thin-walled cells; style with sclerified basal ring, upper part of shaft and branches with mostly pointed hairs. Achenes ca. 8-ribbed, ca. 2 mm long, densely covered with short, spreading, biseriate setulae, raphides elongate (Fig. 1H); carpodium doliiform, with short, thick-walled cells, with glandular dots crowded around upper edge; pappus rather fragile, with outer series of short squamellae, inner pappus series of white capillary bristles, only slightly broadened distally. Pollen grains tricolporate, spinulose, type A, 37–40 μm in diam.

The name is derived from *dasys* meaning shaggy and *anthina* meaning little flower.

The genus contains the following two species.

Key to the Species of *Dasyanthina*

1. Petioles without wings; corolla throat with long unicellular hairs inside, lobes with shorter unicellular hairs restricted to outer surface *D. serrata*
1. Petioles winged to base; corolla throat with hairs inside not longer than those distally on lobes, lobes distally with hairs on both inner and outer surfaces *D. palustris*

Dasyanthina palustris (Gardner)

H. Robinson, comb. nov.

Vernonia palustris Gardner, London J. Bot. 5:215. 1846. BRAZIL: Bahia, Espirito Santo, Minas Gerais.

Dasyanthina serrata (Less.)

H. Robinson, comb. nov.

Vernonia serrata Less., Linnaea 4:275. 1829. BRAZIL: Rio de Janeiro, São Paulo.

Quechualia H. Robinson, gen. nov.

Type: *Vernonia fulva* Griseb.
(Figs. 2A–K, 3)

Plantae perennes frutescentes vel scandentes; caules in pilis appresse T-formibus sparse obsiti. Folia simplicia alterna, petiolis angustis. Inflorescentiae elongate pyramidaliter paniculatae, ramis corymbosis. Capitula homogama pedunculata; bractae involucri interiores persistentes; flores 30–55; corollae discoideae in faucibus intus interdum sparse pilosae, pilis elongatis multicellularibus, pilis in lobis unicellularibus; thecae antherarum base tenuiter caudatae in connectivis glanduliferae; achenia setulifera, raphidis elongatis. Grana pollinis in typo A.

Perennial shrubs or vines to 5 m tall; stems sparsely to densely pilose with simple or

T-shaped hairs, with solid pith. Leaves alternate, petioles narrow, usually short; blades thinly herbaceous, ovate to elliptical or obovate, mostly 10–17 cm long, 3.5–9.0 cm wide, margins with remote, antrorse serrulations, upper surface sparsely pilosulous, lower surface sparsely to densely pilose with simple or T-shaped hairs, with or without many obvious glandular dots, venation pinnate, with 4–6 secondary veins on each side. Inflorescence usually a narrowly pyramidal, thyrsoid panicle with corymbosely cymose branches (Fig. 2A), peduncles obvious, usually slender. Heads discoid, broadly campanulate; involucre 1–2 cm wide, with bracts 60–90, subimbricate to imbricate in 5 or 6 series, outer bracts appressed or spreading, inner bracts persistent, outer surfaces of bracts sometimes bearing seriatly T-shaped hairs (Figs. 2C, 3); receptacle epaleaceous. Florets 30–55; corollas lavender, narrowly funnelform, throat shorter than linear lobes, veins thickened near tips of lobes, throat with or without sparse pilosity of long, multicellular hairs inside (Fig. 2D, E, G), lobes with short, stiff, unicellular hairs outside (Fig. 2H); anther thecae spurred and with thin-walled, denticulate tails, connective with glands (Fig. 2E); apical appendage with mostly thin cell walls; style with sclerified ring at base, upper style shaft and branches with mostly pointed hairs. Achenes 8–10-ribbed, 3–4 mm long, surface with many ascending, biseriate setulae, with glandular dots in grooves and near base, raphides elongate (Fig. 2K); carpodium long-dolliiform, with short, thick-walled cells; outer pappus with short crowded squamellae, inner pappus series of white, capillary bristles, only slightly broadened distally. Pollen grains tricolporate, spinulose, type A, 40–50 μm in diam.

Chromosome number of $n = 17$ is reported from *Q. fulva* (Jones 1979).

The two most common species of the genus have long hairs inside the corolla, but such hairs have not been seen in the two rarer species, *Q. cardenasii* and *Q. smithii*.

The latter two species, both known from only three collections, have all the other characters of the genus, including the shrubby to scandent habit, the narrowly thyrsoid inflorescence, the long peduncles, the heads with involucre 1–2 cm wide, 30–55 florets in the head, the hairs on the outside of the corolla lobes, anther thecae with basal tails, connectives with glandular dots, and elongate raphides in the achene walls. The two rarer species differ in appearance from the common *Q. fulva* only in the less appressed and more pubescent involucre bracts and, in *Q. smithii*, in the more foliose branches of the inflorescence. Only *Dasyanthina* shares most of the characters of *Quechualia*, but that Brazilian genus has a more herbaceous habit, a more rounded inflorescence, and smaller unicellular hairs consistently present inside the throat of the corolla.

The generic name is derived from the Quechua-speaking indians that dominated the area from Peru to northern Argentina where the genus occurs. The genus contains the following four species.

Key to the species of *Quechualia*

1. Outer involucre bracts all appressed or with stiff, spreading tips; peduncles less than 1 mm wide; throats of corollas usually with sparse pubescence of long hairs on inner surface; pollen grains ca. 40 μm in diam.
 2. Leaf blades with distinct glandular dots below; outer involucre bracts obtuse to shortly acute
..... *Q. fulva*
 2. Leaf blades without evident glandular dots below; outer involucre bracts sharply acute to shortly acuminate *Q. trixioides*
1. Outer involucre bracts with weakly to strongly recurved tips; peduncles ca. 1 mm wide; throats of corollas with few or no hairs on inner sur-



Fig. 2. *Quechualia fulva* (Griseb.) H. Robinson. A. Habit. B. Head. C. Hair from outer surface of involucre bract. D. Corolla showing anther tips and style. E. Section of floret showing tailed anthers, glands on connective, and long hairs on inner surface of corolla. F. T-shaped hair from outer surface of corolla. G. Long hairs from inner surface of corolla. H. Hairs from outer surface of corolla lobe. I. Style. J. Achene. K. Raphides from cells of achene wall.

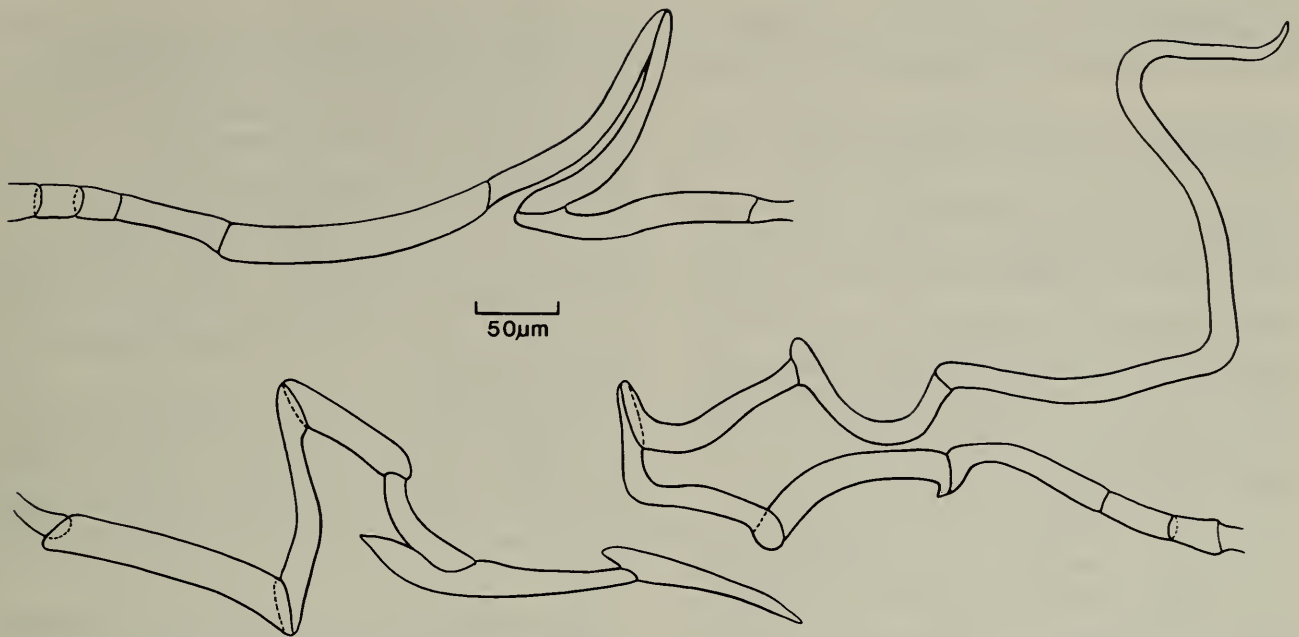


Fig. 3. *Quechualia cardenasii* (H. Robinson) H. Robinson. Hairs from outer surface of involucral bracts, two of the hairs lacking base or tip.

face; pollen grains 45–50 µm in diam.

3. Heads in clusters on axillary, leafless, lateral branches of inflorescence; tips of involucral bracts often tightly recurved, densely tomentellous; plants slender shrubs; pollen grains ca. 50 µm in diam. *Q. cardenasii*

3. Heads few at tips of leafy branches; tips of involucral bracts only partially recurved, densely pilose; plants scandent; pollen grains ca. 45 µm in diam.
 *Q. smithii*

Quechualia cardenasii (H. Robinson)
 H. Robinson, comb. nov.

Vernonia cardenasii H. Robinson, *Phytologia* 49:262. 1981.

The species is still known only from the type collection from the Cordillera Chimoré, Cochabamba, Bolivia. The stems and involucral bracts of the species have a distinct tomentum, but microscopically the hairs are a modified T-form (Fig. 3). Above the basal stalk, the cap cells are in a series

mounted at or near their ends. The individual hairs have a zigzag shape.

Quechualia fulva (Griseb.)
 H. Robinson, comb. nov.

Vernonia fulva Griseb., *Symb. Fl. Argent, Goett. Abhandl.* 24:164. 1879. *Vernonia senecionaefolia* Rusby, *Bull. Torrey Bot. Club* 18:331. 1891.

The species occurs throughout the range of the genus. Specimens range from Depts. of San Martín and Amazonas in northern Peru to the Prov. of Tucuman, Argentina. The bases of the leaf blades are usually obtuse to shortly acute, but in plants from the Provs. of Salta and Jujuy in northern Argentina the bases of the blades are narrowly acuminate.

Quechualia trixioides (Rusby)
 H. Robinson, comb. nov.

Vernonia trixioides Rusby, *Mem. Torrey Bot. Club* 6:54. 1896.

The species is resurrected from the synonymy of *Q. fulva* for material from near Mapiri in the Prov. La Paz, Bolivia and near Machu Picchu in the Prov. Cuzco, Peru that

lack glands on the leaf undersurfaces and have more pointed outer involucre bracts.

Quechualia smithii H. Robinson, sp. nov.

Type: BOLIVIA: Santa Cruz, Prov. Manuel Maria Caballero, 50 km al norte de Mataral (en la carretera Santa Cruz—Comarapa) pasando por San Juan del Potrero y bajando a la cuenca del alto Río Ichilo, 2000–2100 m, 26 May 1989, D. N. Smith, G. Quintana & V. García 13451 (US; isotypes LPB, MO).

Plantae volubiles; folia alterna, laminis base anguste acutis subtus glandulo-punctatis. Inflorescentiae in ramis lateralibus foliiferis terminales paucicapitatae, pedunculis ca. 1 mm latis; capitula ca. 1.5 cm alta; bracteae involucri exteriores apice leniter recurvatae dense pilosae; corollae in faucibus intus non pilosae. Grana pollinis in diam. ca. 45 μ m.

Vines; stems subglabrous, with small T-shaped hairs mostly near nodes. Leaves alternate, petioles 1.0–1.5 cm long; blades elliptical to somewhat obovate, 8–14 cm long, 2–5 cm wide, base narrowly acute, margins remotely sharply serrate distally, apex narrowly shortly acuminate, upper surface sparsely pilosulous, lower surface sparsely pilose on veins, with sparse and sometimes obscure glandular dots; secondary veins ca. 4 on each side, strongly ascending. Inflorescence terminal on leafy lateral branches, corymbiform cymes with few to 20 heads; peduncles 1.2–4.5 cm long, ca. 1 mm wide. Heads ca. 1.5 cm high; involucre green, bracts ca. 80, in ca. 6 series, narrowly oblong to linear, 3–12 mm long, 1.0–2.5 mm wide, tips obtuse to short-acute, basal bracts densely brownish pilose, with tips slightly recurved, larger bracts more sparsely brownish pilose outside, hairs T-formed. Florets ca. 25 in a head; corollas dark magenta, ca. 13 mm long, tube ca. 5 mm long, throat ca. 4 mm long, sparsely glandular-dotted outside, without evident hairs inside, lobes linear, ca. 5 mm long, ca. 0.7 mm wide, distally scabrid outside with

many short, unicellular hairs; anther thecae ca. 3 mm long, with short, basal, denticulate tails of thin-walled cells, connective bearing many glands, apical appendage ca. 1 mm long, glabrous. Achenes submature, ca. 2.5 mm long, densely setuliferous; pappus with outer series capillary, ca. 1 mm long, inner series fragile, capillary, 6–7 mm long, not or scarcely wider distally. Pollen grains ca. 45 μ m in diam.

Paratype: BOLIVIA: Cochabamba: Prov. Carrasco. Chua Khocha, ca. 17°48'S, 64°43'W, 2300 m, trepadora de flores color lila, 5 Sep 1990, Ramiro Renejel 12 (NY, US).

The type specimen is cited from "Bosque primario, bosque pluvial montana; laderas con abundante Prumnopitys y pastizales antropogenicos." The species seems most distinct in the inflorescence of few heads born on leafy lateral branches. The scandent habit might also be distinctive if the difference proves consistent. The larger heads on stouter peduncles and the apparent lack of hairs inside the corolla throat place the species closest to *Q. cardenasii*, but the latter is a slender subshrub or shrub with numerous heads on lateral branches lacking leafy bracts. The stems, leaf undersurfaces, and involucre bracts of the latter are more densely tomentose, and the involucre bracts have strongly recurved tips.

The species is named after the first listed collector of the type specimen, the late David N. Smith.

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